CLAIMS

1. A method for forming a multilayer electrode for a flat panel display device, said method comprising the steps of:

a) depositing a metal alloy layer;

b) depositing a protective layer above said metal alloy layer to form a multilayer stack;

c) subjecting said multilayer stack to a cleansing process to remove contaminants; and

d) etching said multilayer stack to form said multilayer electrode for said flat panel display device.

2. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 1, wherein step a) comprises depositing a metal alloy layer of aluminum and neodymium.

3. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 1, wherein step a) comprises depositing said metal alloy layer to a depth of approximately 2500 angstroms.

4. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 1, wherein step b) comprises depositing a protective layer comprised of molybdenum and tungsten.

5. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 1, wherein step b) comprises depositing said protective layer to a depth of approximately 1200 angstroms

6. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 1, wherein step c) comprises subjecting said multilayer stack to a chemical solution.

7. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 6, wherein said chemical solution is selected from the group consisting of NH_4OH, HF, and TMAH.

8. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 1, wherein step d) comprises wet etching said multilayer stack to form said multilayer electrode for said flat panel display device.

9. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 7, wherein step d) comprises wet etching said multilayer stack with a wet etchant comprised of H_3PO_4, HNO_3, CH_3COOH, and H_2O to form said multilayer electrode for said flat panel display device.

10. A method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device, said method comprising the steps of:

a) subjecting said multilayer stack to a cleansing process to remove oxidation-inducing contaminants such that unwanted excess oxidation caused by said oxidation-inducing contaminants is reduced; and

b) etching said multilayer stack, cleansed in step a), to form said multilayer electrode for said flat panel display device.

11. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 10, wherein said multilayer layer stack is comprised of a metal alloy layer and a protective layer.

12. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein said metal alloy layer is comprised of aluminum and neodymium.

13. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein said metal alloy layer is deposited to a depth of approximately 2500 angstroms.

14. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein said protective layer is comprised of molybdenum and tungsten.

15. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein said protective layer is deposited to a depth of approximately 1200 angstroms.

16. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein step a) comprises subjecting said multilayer stack to a chemical solution.

17. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 16, wherein said chemical solution is selected from the group consisting of NH_4OH, HF, and TMAH.

18. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein step b) comprises wet etching said multilayer stack to form said multilayer electrode for said flat panel display device.

19. The method for cleansing and etching a multilayer stack during the formation of a multilayer electrode for a flat panel display device as recited in Claim 11, wherein step b) comprises wet etching said multilayer stack with a wet etchant comprised of H_3PO_4, HNO_3, CH_3COOH, and H_2O to form said multilayer electrode for said flat panel display device.

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20. A multilayer electrode for a flat panel display device, said multilayer electrode comprising:

a metal alloy layer; and

a protective layer disposed above said metal alloy layer to form a multilayer stack, said multilayer stack etched to form said multilayer electrode.

21. The multilayer electrode for a flat panel display device as recited in Claim 20, wherein said metal alloy layer is comprised of aluminum and neodymium.

22. The multilayer electrode for a flat panel display device as recited in Claim 20, wherein said metal alloy layer has a depth of approximately 2500 angstroms.

23. The multilayer electrode for a flat panel display device as recited in Claim 20, wherein said protective layer is comprised of molybdenum and tungsten.

24. The multilayer electrode for a flat panel display device as recited in Claim 20, wherein said protective layer has a depth of approximately 1200 angstroms.

25. A method for forming a multilayer stack with reduced formation of an intermetallic compound, said method comprising the steps of:

a) depositing a first metal alloy layer above a substrate;

b) forming a barrier layer above said first metal alloy layer, said barrier layer adapted to prevent the formation of an intermetallic compound within said first metal alloy layer; and

c) depositing a second metal alloy layer above said barrier layer, said barrier layer preventing the formation of said intermetallic compound within said second metal alloy layer.

26. The method for forming a multilayer stack with reduced formation of an intermetallic compound as recited in Claim 25, wherein step a) comprises depositing a first metal alloy layer of aluminum and neodymium above said substrate.

27. The method for forming a multilayer stack with reduced formation of an intermetallic compound as recited in Claim 25, wherein step a) comprises depositing said first metal alloy layer to a depth of approximately 2500 angstroms.

28. The method for forming a multilayer stack with reduced formation of an intermetallic compound as recited in Claim 25, wherein step b) comprises forming said barrier layer by subjecting said first metal alloy layer to an oxygen containing environment such that a native oxide layer is formed on said first metal alloy layer.

29. The method for forming a multilayer stack with reduced intermetallic compounds as recited in Claim 28, wherein said oxygen containing environment is obtained by breaking a vacuum utilized during said deposition of said first metal alloy layer and allowing air to contact said first metal alloy layer.

30. The method for forming a multilayer stack with reduced intermetallic compounds as recited in Claim 28, wherein said oxygen containing environment is obtained by introducing oxygen into an environment utilized during said deposition of said first metal alloy layer.

31. The method for forming a multilayer stack with reduced intermetallic compounds as recited in Claim 25 further comprising the step of:

after step b) and prior to step c), subjecting a target material used in the deposition of said second metal alloy layer to a pre-sputter cleansing process.

32. The method for forming a multilayer stack with reduced intermetallic compounds as recited in Claim 25, wherein step c) comprises depositing a second metal alloy layer comprised of molybdenum and tungsten above said barrier layer.

33. The method for forming a multilayer stack with reduced intermetallic compounds as recited in Claim 25, wherein step c) comprises depositing said second metal alloy layer to a depth of approximately 1200 angstroms.

34. A method for forming a multilayer electrode for a flat panel display device, wherein said method reduces the formation of an intermetallic compound during the fabrication of said multilayer electrode, said method comprising the steps of:

a) depositing a first metal alloy layer above a substrate;

b) forming a barrier layer above said first metal alloy layer, said barrier layer adapted to prevent the formation of an intermetallic compound within said first metal alloy layer;

c) depositing a second metal alloy layer above said barrier layer to form a multilayer stack, said barrier layer preventing the formation of said intermetallic compound within said second metal alloy layer;

d) subjecting said multilayer stack to a cleansing process to remove contaminants; and

e) etching said multilayer stack to form said multilayer electrode for said flat panel display device.

35. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step a) comprises depositing a first metal alloy layer of aluminum and neodymium above said substrate.

36. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step a) comprises depositing said first metal alloy layer to a depth of approximately 2500 angstroms.

37. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step b) comprises forming said barrier layer by subjecting said first metal alloy layer to an oxygen containing environment such that a native oxide layer is formed on said first metal alloy layer.

38. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 37, wherein said oxygen containing environment is obtained by breaking a vacuum utilized during said deposition of said first metal alloy layer and allowing air to contact said first metal alloy layer.

39. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 37, wherein said oxygen containing environment is obtained by introducing oxygen into an environment utilized during said deposition of said first metal alloy layer.

40. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34 further comprising the step of:

after step b) and prior to step c), subjecting a target material used in the deposition of said second metal alloy layer to a pre-sputter cleansing process.

41. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step c) comprises depositing a second metal alloy layer comprised of molybdenum and tungsten above said barrier layer.

42. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step c) comprises depositing said second metal alloy layer to a depth of approximately 1200 angstroms.

43. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step d) comprises subjecting said multilayer stack to a chemical solution prior to deposition of a photoresist layer.

44. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 43, wherein said chemical solution is selected from the group consisting of NH_4OH, HF, and TMAH.

45. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step e) comprises wet etching said multilayer stack to form said multilayer electrode for said flat panel display device.

46. The method for forming a multilayer electrode for a flat panel display device as recited in Claim 34, wherein step e) comprises wet etching said multilayer stack with a wet etchant comprised of H_3PO_4, HNO_3, CH_3COOH, and H_2O to form said multilayer electrode for said flat panel display device.

47. A multilayer electrode for a flat panel display device, said multilayer electrode comprising:

a metal alloy layer;

a barrier layer disposed above said metal alloy layer; and

a protective layer disposed above said barrier layer to form a multilayer stack, said multilayer stack etched to form said multilayer electrode.

48. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said metal alloy layer is comprised of aluminum and neodymium.

49. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said metal alloy layer has a depth of approximately 2500 angstroms.

50. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said barrier layer is comprised of a native oxide layer of said metal alloy layer.

51. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said barrier layer has a depth of less than approximately 100 angstroms.

52. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said protective layer is comprised of molybdenum and tungsten.

53. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said protective layer has a depth of approximately 1200 angstroms.

54. The multilayer electrode for a flat panel display device as recited in Claim 47, wherein said multilayer electrode is etched using a wet etchant with volume percentages of constituents of approximately 70-80 percent H_3PO_4; approximately 10-15 percent HNO_3; approximately 7-12 percent CH_3COOH; and approximately 2-8 percent H_2O to form a desired sloped profile.